DOCUMENT RESUME

ED 269 141 PS 015 765

AUTHOR Gordon, Sandra L.; Anderson, Beth C.
TITLE Complexity Survey.
PUB DATE Apr 86
NOTE 9p.; Paper presented at the Annual Conference of the Midwest Association for the Education of Young Children (Peoria, IL, April 17-20, 1986).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classification; *Difficulty Level; Early Childhood Education; *Instructional Materials; *Preschool Teachers; Surveys; *Teacher Response
IDENTIFIERS *Complexity Index

ABSTRACT

To determine whether consensus existed among teachers about the complexity of common classroom materials, a survey was administered to 66 pre-service and in-service kindergarten and prekindergarten teachers. Participants were asked to rate 14 common classroom materials as simple, complex, or super-complex. Simple materials have one obvious part, have no subparts enabling multiple combinations, and support children's activity for short periods of time only. Complex materials have subparts or two essentially different items together. Super-complex materials have three or more essentially different elements combined, or they include a markedly different object added to an already complex material. Items rated were: (1) a ball; (2) sand without props; (3) a set of Legos; (4) an obstacle course made of tires, boards, and boxes; (5) a block area with small props and large crates; (6) a single book; (7) an outdoor commercial wooden climbing structure; (8) blocks with no props; (9) crayons; (10) playdough without props; (11) a well-equipped dramatic play area; (12) pegs and pegboard; (13) wet sand for digging, pouring, and making impressions with tools; and (14) a guinea pig, gerbil, or rabbit. Teachers were in substantial agreement, viewing as simple 1, 2, and 6; as complex 3, 8, and 12; as super-complex 4, 5, 11, and 13. Discrepancies in teachers' ratings were found for items 7, 9, 10, and 14. The extent of consensus is taken as support for the ideas of Kritchevsky, Prescott, and Walling (1969). (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED269141

Complexity Survey

by

Sandra L. Gordon, Ph.D. and Beth C. Anderson, Ed.D.

Moorhead State University

Moorhead, MN 56560

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Sandra L. Gordon

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 015765

BEST COPY AVAILABLE

Dr. Sandra L. Gordon is Associate Professor in the Education Department, Moorhead State University. She is Coordinator of the Elementary and Early Education Division and teaches elementary education courses.

Dr. Beth C. Anderson is Associate Professor in the Education Department, Moorhead State University, where her primary teaching areas are Early Childhood courses. Her major research and writing interests are children's play.

Complexity Survey

by

Sandra L. Gordon and Beth C. Anderson

Moorhead State University

Moorhead, Minnesota 56560

Classroom materials for young children's play may be viewed in a variety of ways. One schema for categorizing children's play units is that of Kritchevsky, Prescott, and Walling (1969). These authors conceptualize children's play units as soft-hard, open-closed, simple-complex, seclusion-inclusion, and high-low mobility. These dimensions serve as a lens through which to view the inherent potential of play units to accomplish particular goals with young children.

These dimensions are often treated briefly within the context of an entire preschool curriculum (Hendrick, 1980; Read, 1980). They have been slightly modified and extended within an ecological treatment of early education (Day, 1983). A more extensive application of these dimensions may be found in Loughlin and Suina (1982). Though presented in an elementary education context, Loughlin and Suina's explications are applicable to early childhood classrooms designed for prekindergarten-aged children.

With further elaboration, the simple-complex dimension can serve as a useful tool to judge the learning potential of particular classroom materials. In an effort to substantiate the ideas of Kritchevsky, Prescott, and Walling (1969), a survey of common classroom materials was devised and administered. Respondents to the survey were preservice and inservice teachers of kindergarten and prekindergarten children.

BEST COPY AVAILABLE

Definitions

Complexity can be viewed on a continuum with three basic checkpoints: simple, complex, and super-complex. Any classroom item can be rated as falling somewhere on this continuum.

Simple materials have one obvious use and do not have subparts which enable a child to make multiple combinations (Kritchevsky, Prescott, & Walling, 1969). Simple materials offer few options and support children's activity for short periods of time (Loughlin & Suina, 1982). Typically, simple units have one manipulable aspect (Prescott, 1979). Examples include a swing, rocking horse, tricycle, puzzle, and matching game.

Complex materials have subparts or two essentially different items together. An item has subparts if its various components can be assembled in a number of ways, multiplying the combinatorial possibilities for activity (Loughlin & Suina, 1982). An example of two essentially different materials include a simple balance scale with trays of assorted objects for comparative weighing. An example of a complex material that has subparts is a five quart pail of assorted buttons.

Super-complex materials have three or more essentially different elements combined, or they include a markedly different object added to an already complex material (Loughlin & Suina, 1982). This allows for greater manipulation and improvisation (Day, 1983). Examples of three or more different play elements are a water table with containers, siphons, funnels and tubing. An example of a complex material with a

BEST COPY AVAILABLE

markedly different substance added is the collection of buttons with sand to bury them in.

The Survey

In the survey 14 items were listed as common classroom materials. Teachers were asked to rate the materials as simple, complex, or super-complex without collaborating with others. Sixty-six preservice and inservice teachers participated in the survey. Their responses are reported in percentages. If teachers agreed in rating an item 67% or two-thirds of the time, we considered that there was consensus.

Insert Table

TABLE

Percent of Teachers Rating Materials as Simple, Complex, or Super-Complex

N = 66

Item	Simple	Complex	Super-Complex	Undecided
1. Ball	89%	9%	1%	--
2. Sand without props	76%	21%	1%	1%
3. Set of Legos	1%	76%	23%	--
4. Obstacle course made of tires, boards, boxes	3%	17%	77%	3%
5. Block area with small props and large crates	1%	9%	85%	4%
6. Single book	89%	9%	--	1%
7. Outdoor commercial wooden climbing structure	3%	61%	32%	4%
8. Blocks with no props	17%	76%	6%	1%
9. Crayons	62%	35%	1%	1%
10. Playdough without props	64%	29%	6%	1%
11. Well-equipped dramatic play area	--	4%	94%	1%
12. Pegs and pegboard	33%	67%	--	--
13. Wet sand for digging, pouring and making impressions with tools	--	15%	85%	--
14. Guinea pig, gerbil, or rabbit	59%	24%	17%	--

Teachers were in substantial agreement. There was consensus that these materials were seen as simple: a ball, sand without props, and a book. There was consensus that these materials were complex: set of legos, blocks with no props, and pegs and pegboards. Teachers agreed that these materials were super-complex: obstacle course made of tires, boards and boxes; block area with small props and large crates; well-equipped dramatic play area and wet sand with tools for digging, pouring, and making impressions.

There was a discrepancy in how teachers perceived an outdoor climber. More than half saw it as complex, while almost one-third saw it as super-complex. In point of fact this form of structure has a tire swing, a slide, monkey bars and multiple levels for climbing, sliding and swinging. Furthermore, Kritchevsky et.al. rate all art materials as complex. Yet in this survey teachers were somewhat divided in determining whether crayons and playdough were simple or complex. Teachers may see a discrepancy between the two because both materials can be used at sensorimotor and symbolic levels.

Kritchevsky, Prescott and Walling also rate an animal as complex. There was more spread of disagreement about this item than any other on the entire survey. More than half of the teachers see an animal as simple. One fourth see it as complex. One sixth even rated it as super-complex. Perhaps the reason why so many teachers rate a gerbil, a guinea pig and a rabbit as simple is because children have limited opportunities to "play" with these kinds of animals in classroom settings.

This survey set out to determine whether there was consensus among teachers about the level of complexity of common classroom materials.

BEST COPY AVAILABLE

In most instances there was consensus among teachers, thus substantiating the ideas of Kritchevsky, Prescott, and Walling (1969).

Bibliography

Day, D. Early Childhood Education: A Human Ecological Approach. Glenview, Illinois: Scott, Foresman, and Company, 1983.

Hendrick, J. Total Learning For the Whole Child. St. Louis: The C. V. Mosby Company, 1980.

Kritchevsky, S., Prescott, E., & Walling, L. Planning Environments for Young Children: Physical Space. Washington, D.C.: National Association for the Education of Young Children, 1969.

Loughlin, C., & Suina, J. The Learning Environment: An Instructional Strategy. New York: Teachers College, Columbia University, 1982.

Prescott, E. "The Physical Environment--A Powerful Regulator of Experience." Child Care Information Exchange, April 1979, pp. 1-4.

Read, K., & Patterson, J. The Nursery School and Kindergarten, second edition. New York: Holt, Rinehart and Winston, 1980.